AR-B7230 BOARD

EPIC SBC support AMD Socket S1 Turion and Sempron processors with Dual Gigabit LANs / LCD / DVI

User's Manual

Manual Rev: 1.0
Book Number: AR-B7230-09.2.13

Revision

Version	Date	Author	Description
0.1	2009/2/11	Marc	Draft
0.2	2009/2/13	Judy Tseng	Revise
1.0	2009/2/13	Marc	Release

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Table of Contents

1 INTRODUCTION

Welcome to the AR-7230 Computer. The AR-7230 incorporates the advanced AMD® M690E & SB600 chipset. It supports the AMD Socket S1 Turion 64 X2 and Sempron Processors, while coming with a 400/533MHz Front Side Bus.

The AR-B7230 is a Complete Platform that totally supports EPIC form factor SBC.

1.1 Specifications

CPU : AMD Socket S1 Turion 64 X2 and Sempron Processors
Turion 64 X2 TL62
Turion 64 X2 TL56
Mobile AMD Sempron 3700+
Mobile AMD Sempron 3500+
Mobile AMD Sempron 2100+
AMD Sempron 2100+

- Chipset : AMD M690E Integrated Graphic Processor (IGP) and SB600 South Bridge
- BIOS: AWARD
- RAM memory : One SO-DIMM socket support DDR2 SDRAM up to 2GB
  Supports DDR2-400 up to DDR2-667
- Watchdog Timer : Software programmable 1~255 Seconds (Wait RD confirm)
- Battery : Lithium Battery, 3V 220Mah
- Power Requirements : AT: 12V Single Voltage Input (BIOS Default) , ATX: power switch pin header and pin header for external 5V stand-by input
- Hardware monitoring :
  1. CPU voltage
  2. CPU and System Temperature
- LED : 2 LEDs for Power and HDD. Power LED (Green), HDD (Orange)
- Button : Reset button (use pin header)
- Fan connector :
  1. 1 x CPU fan
  2. 1 x System Fan with temperature controller (connector color different from CPU Fan connector)
- OS : Win XP/XP Embedded, Linux, Vista

Video

- Graphic Controller :
  AMD M680E integrated graphic processor (IGP)
  2D, 3D and Motion Video acceleration
  Dual Independent Display
  Frame Buffer shared from system memory up to 256MB
  Full DirectX 9.0 and Shader Model 2.0 support
- VGA : 1 x VGA port
- DVI : 1 x DVI-D port

- LCD :
  1 x Dual Channel 18bits LVDS Interface
  LCD inverter power connector and ON/OFF control
  Support 3.3V and 5V LCD

AUDIO

- Audio Interface : 5.1 CH Audio Realtek ALC655 AC'97 Rev.2.3 with amp.

Storage

- IDE : 1 x E-IDE
- SSD :
  1 x Compactflash Type-II support UDMA
  1 x SATA DOM connector
- FDC : N/A
- SATA : 1 x SATA HDD and one SATA DOM interface

Network Interface

- Ethernet : 2 x BCM5787 PCI express Giga bps Ethernet LAN Support boot from LAN & WOL

I/O

- Serial Port :
  1 x RS-232 (COM1)
  2 x RS-232 (COM2/3)
  1 x RS-232/422/485 (COM4)
- Parallel Port : 1 x LPT supports SPP/EPP/ECP modes
- GPIO : 8 Independent TTL level I/O
- USB : 2 x External ports (Stacked Type A)
- Audio : 5.1 CH Audio
- Expansion slot : 1 x PCI-104 (PCI Interface)
- Keyboard / Mouse : 1 x PS/2 for Keyboard and Mouse

Mechanical

- Dimension : 115mm x 165mm (4.528 x 6.496 inches)
- Operating Temperature : 0~60^{o}C (32~140^{o}F)
- Storage Temperature : -20~80^{o}C (-4~176^{o}F)
- Relative Humidity : 0 to 90% @ 40°C, non-condensing (95% @ 40°C, Non-Condensing by request)

EMC & Safety

- EMC : CE, FCC Class A

Notes:

CF must be surfaced with PCB edge.

Dual Display CRT+LCD, DVI+LCD, CRT+DVI

1.2 Package Contents

Check if the following items are included in the package.

- The quick manual
- AR-B7230
- 1 software utility CD
- Cooler

Optional EPIC Cable Sets (Purchase Separately)

- Power Cable (AT)
- Power Cable (ATX)
- 40/44-Pin IDE Cable
- LPT Cable
- K/M Cable
- Audio Cable (Stereo)
- USB Cable (with 4 screws)
- COM Cable (10-Pin) x2
- SATA cable
- DVI cable

Optional Cable (Purchase Separately)

- Audio Cable (5.1CH)

1.3 Block Diagram

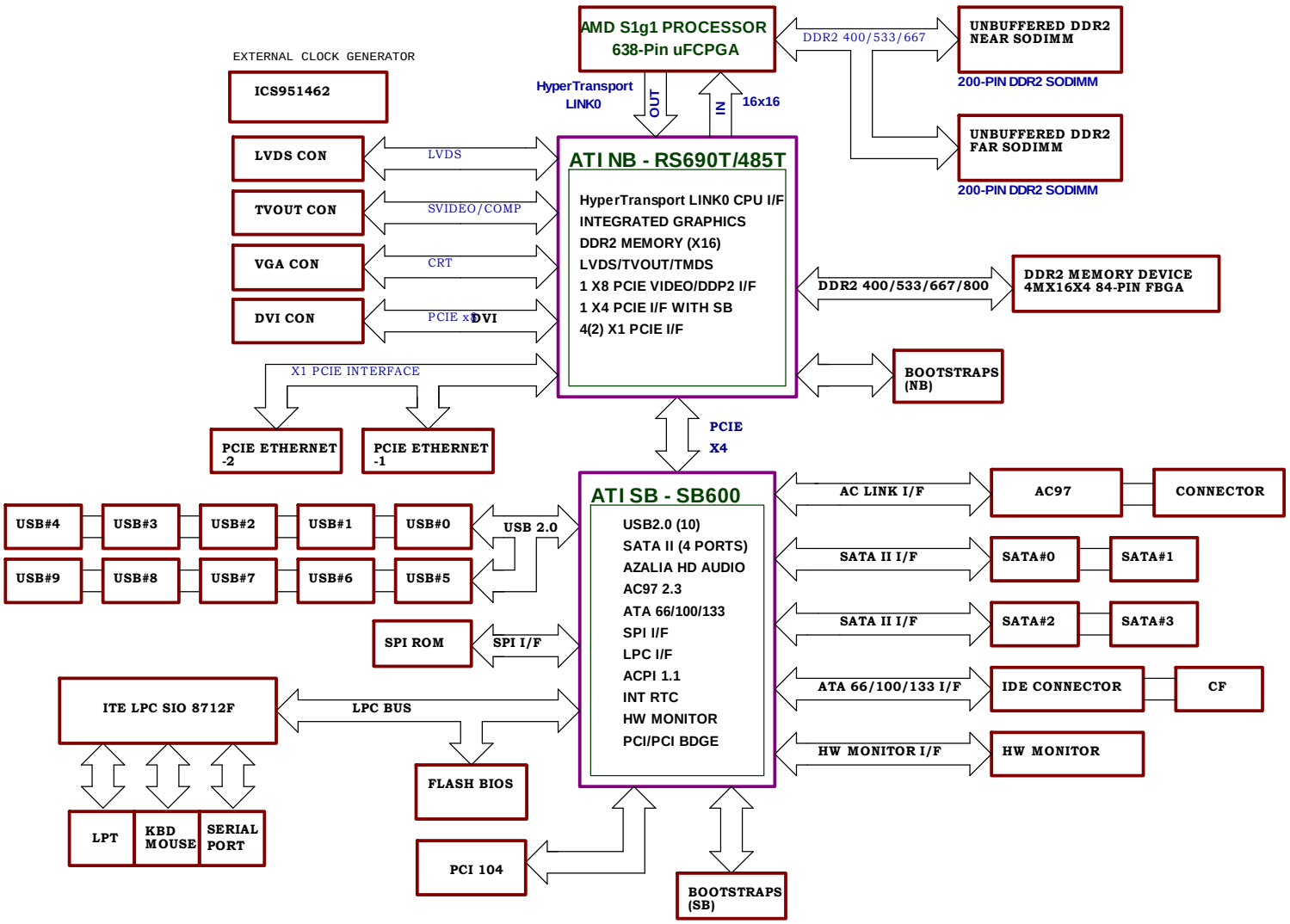


Figure 1: Black Diagram

2 H/W INFORMATION

This chapter describes the installation of AR-B7230. At first, it shows the Function diagram and the layout of AR-B7230. It then describes the unpacking information which you should be careful with, as well as the jumper/switch settings for the AR-B7230 configuration

2.1 Locations (Top side)

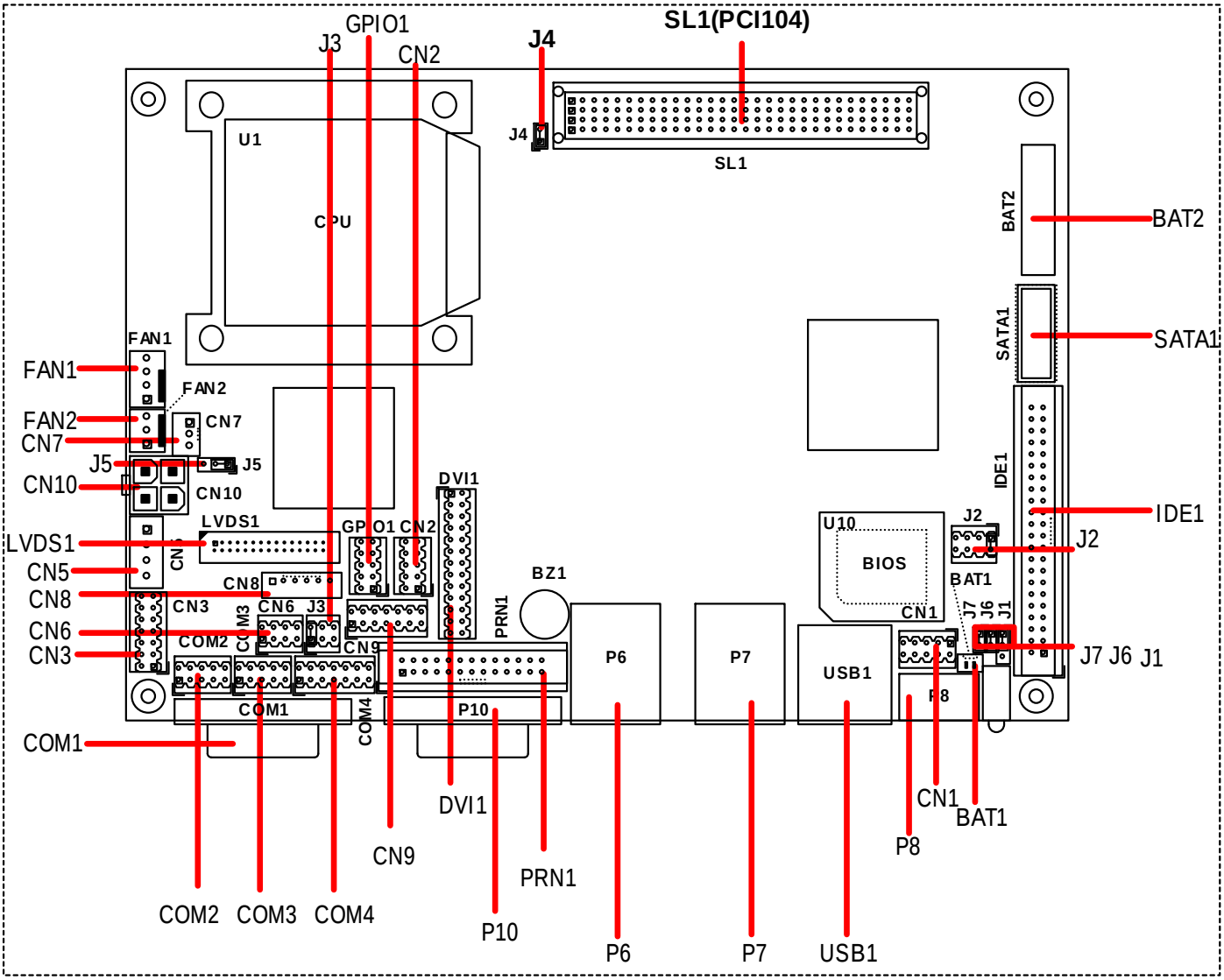


Figure 2: Locations (Top side)

1	CN1 USB Port 3,2	19	IDE1
2	CN2 USB Port 5,4	20	P8 PS2 Keyboard & Mouse
3	CN3 Audio Port	21	J1 Clear CMOS
4	CN5 SATA1 Power (Output)	22	J2 ENABLE SPI/DEBUG
5	COM2 Serial Port 2	23	J3 RS-232/422/485 SELECT
6	COM3 Serial Port 3	24	J4 SERIRQ to SL1 Pin B1
7	CN6 PWR.SW, Reset, CaseOpen, GPIO	25	J5 LCD POWER SELECT
8	CN7 ATX Power SB5V Input	26	J6 CF MASTER/SLAVE SELECT
9	CN8 Backlight Power (Output)	27	J7 CF DMA SELECT
10	CN10 Power +12V (Input)		
11	COM4 Serial Port 4		
12	PRN1 Parallel Port		
13	FAN1 CPU / System Fan		
14	FAN2 System / CPU Fan		
15	GPIO1 Digital I/O		
16	DVI1 Digital Visual Interface		
17	LVDS1		
18	BAT1 External Battery Input		

2.2 Locations (Bottom Side)

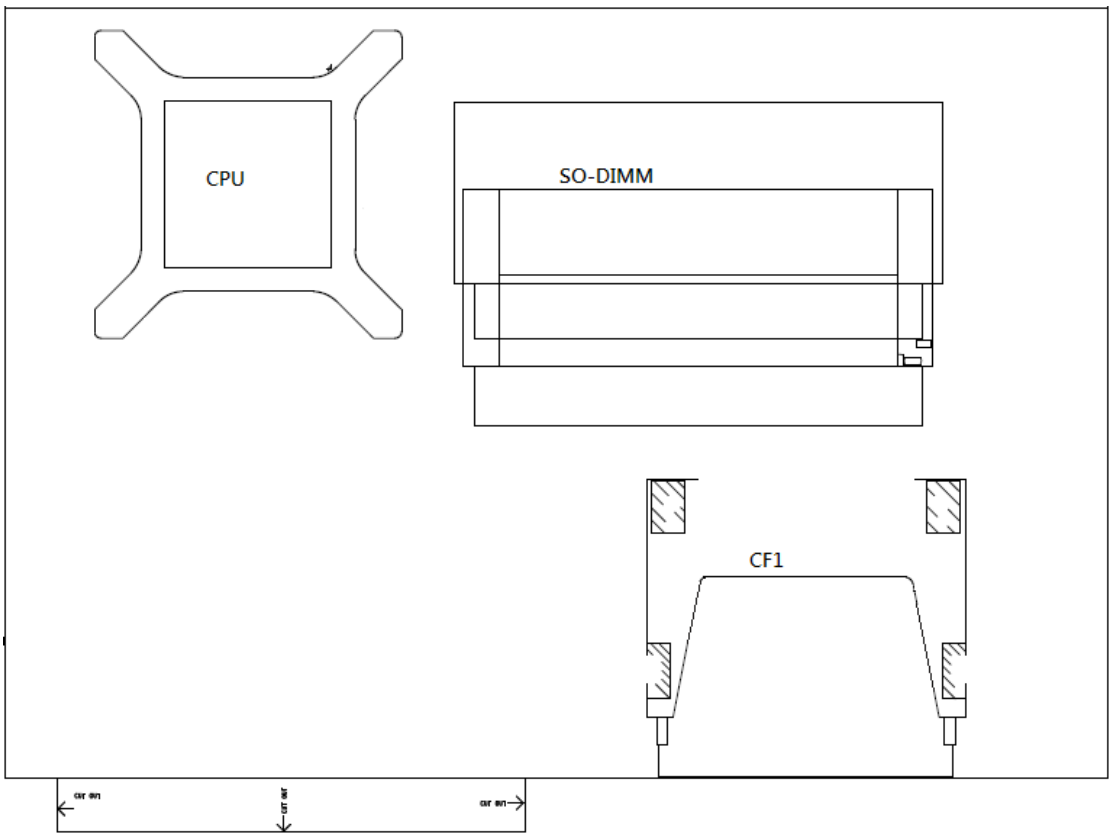
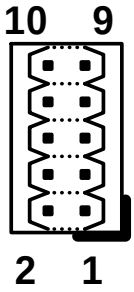


Figure 3: Locations (Bottom side)

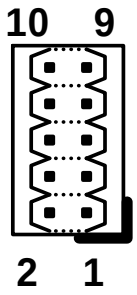
2.3 Connectors and Jumper Setting

2.3.1 CN1 (USB Port 3,2)



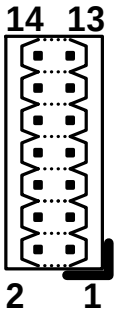
PIN	SIGNAL	PIN	SIGNAL
1	+5V	**6**	D2+
2	+5V	**7**	GND
3	D3-	**8**	GND
4	D2-	**9**	GND
5	D3+	**10**	GND

2.3.2 CN2 (USB Port 5,4)



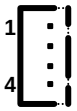
PIN	SIGNAL	PIN	SIGNAL
1	+5V	**6**	D4+
2	+5V	**7**	GND
3	D5-	**8**	GND
4	D4-	**9**	GND
5	D5+	**10**	GND

2.3.3 CN3 (Audio Port)



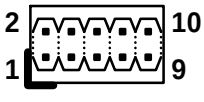
PIN	SIGNAL	PIN	SIGNAL
1	R-OUT	**8**	A-GND
2	L-OUT	**9**	A-GND
3	A-GND	**10**	A-GND
4	A-GND	**11**	SR-OUT
5	R-IN	**12**	SL-OUT
6	L-IN	**13**	LFT-OUT
7	MIC-IN	**14**	SEN-OUT

2.3.4 SATA1 Power (Output)



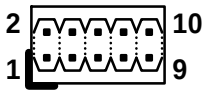
PIN	SIGNAL
1	+12V
2	GND
3	+3.3V
4	+5V

2.3.5 COM2 (Serial Port 2)



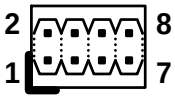
PIN	SIGNAL	PIN	SIGNAL
1	DCD2	**6**	CTS2
2	DSR2	**7**	DTR2
3	RX2	**8**	RI2
4	RTS2	**9**	GND
5	TX2	**10**	NC

2.3.6 COM3 (Serial Port 3)



PIN	SIGNAL	PIN	SIGNAL
1	DCD3	**6**	CTS3
2	DSR3	**7**	DTR3
3	RX3	**8**	RI3
4	RTS3	**9**	GND
5	TX3	**10**	NC

2.3.7 CN6 (PWR.SW, Reset, CaseOpen, GPIO)

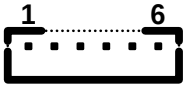


PIN	SIGNAL	PIN	SIGNAL
1	POSW	**5**	CASE
2	GND	**6**	GND
3	REST	**7**	GPIO
4	GND	**8**	GND

2.3.8 CN7 (ATX Power SB5V Input)

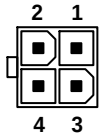
PIN	SIGNAL
1	GND
2	PSON
3	5VSB

2.3.9 CN8 (Backlight Power Output)



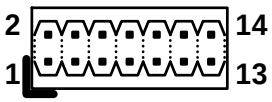
PIN	SIGNAL	PIN	SIGNAL
1	+12V	4	BLEN
2	+12V	5	GND
3	GND	6	BLON

2.3.10 CN10 (Power +12V Input)



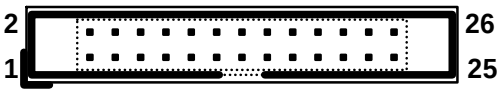
PIN	SIGNAL
1	GND
2	+12V
3	GND
4	+12V

2.3.11 COM4 (Serial Port 4)



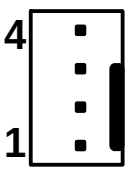
PIN	SIGNAL	PIN	SIGNAL
1	DCD3	8	RI3
2	DSR3	9	GND
3	RX3	10	NC
4	RTS3	11	TX+
5	TX3	12	TX-
6	CTS3	13	RX+
7	DTR3	14	RX-

2.3.12 AUDIO1 (Audio output connector)



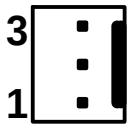
PIN	SIGNAL	PIN	SIGNAL
1	STB	14	GND
2	AFD	15	D6
3	D0	16	GND
4	ERR	17	D7
5	D1	18	GND
6	INIT	19	ACK
7	D2	20	GND
8	SLIN	21	BUSY
9	D3	22	GND
10	GND	23	PE
11	D4	24	GND
12	GND	25	SLCT
13	D5	26	NC

2.3.13 FAN1 (CPU / System Fan)



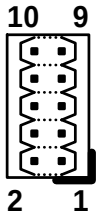
PIN	SIGNAL
1	GND
2	+12V
3	DET.
4	CTL.

2.3.14 FAN2 (System / CPU Fan)



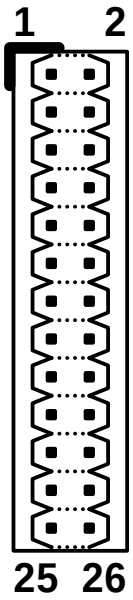
PIN	SIGNAL
1	GND
2	FAN2
3	DET.

2.3.15 GPIO1 (Digital I/O)



PIN	SIGNAL	PIN	SIGNAL
1	DIO0	**6**	DIO6
2	+5V	**7**	DIO3
3	DIO1	**8**	DIO5
4	DIO7	**9**	GND
5	DIO2	**10**	DIO4

2.3.16 DVI1 (Digital Visual Interface)



PIN	SIGNAL	PIN	SIGNAL
1	**GND**	**14**	**I2CK**
2	**TX0+**	**15**	**+5V**
3	**TX0-**	**16**	**I2DT**
4	**GND**	**17**	**RED**
5	**TX1+**	**18**	**GND**
6	**TX1-**	**19**	**GREEN**
7	**GND**	**20**	**GND**
8	**TX2+**	**21**	**BLUE**
9	**TX2-**	**22**	**GND**
10	**GND**	**23**	**VSYNC**
11	**TXC+**	**24**	**CLK**
12	**TXC-**	**25**	**HSYNC**
13	**HPD**	**26**	**DAT**

2.3.17 LVDS1

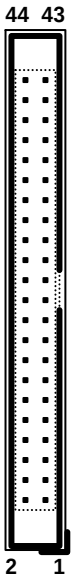
PIN	SIGNAL	PIN	SIGNAL	PIN	SIGNAL
1	+VDD	**11**	U3+	21	I2CLK
2	GND	**12**	U3-	22	L1+
3	UCK-	**13**	U0+	23	L1-
4	UCK+	**14**	U0-	24	I2DAT
5	GND	**15**	GND	25	L0+

6	U2-	**16**	LCK+	26	L0-
7	U2+	**17**	LCK-	27	L3+
8	GND	**18**	GND	28	L3-
9	U1-	**19**	L2+	29	+VDD
10	U1+	**20**	L2-	30	+VDD

2.3.18 BAT1 (External Battery Input)

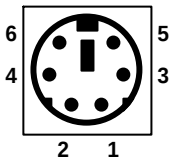
PIN	SIGNAL
1	**3VIN**
2	**GND**

2.3.19 IDE1



PIN	SIGNAL	PIN	SIGNAL	PIN	SIGNAL	PIN	SIGNAL
1	RST-	**12**	D12	23	IOW-	34	DMA66-
2	GND	**13**	D2	24	GND	35	A0
3	D7	**14**	D13	25	IOR-	36	A2
4	D8	**15**	D1	26	GND	37	CS0-
5	D6	**16**	D14	27	IRDY	38	CS1-
6	D9	**17**	D0	28	CSEL	39	ACT-
7	D5	**18**	D15	29	DACK-	40	GND
8	D10	**19**	GND	30	GND	41	+5V
9	D4	**20**	NC	31	IRQ	42	+5V
10	D11	21	DREQ-	32	NC	43	GND
11	D3	22	GND	33	A1	44	NC

2.3.20 PS2 (Keyboard & Mouse)



PIN	**SIGNAL**	**PIN**	**SIGNAL**
1	**KBDAT**	**4**	**+5V**
2	**MSDAT**	**5**	**KBCLK**
3	**GND**	**6**	**MSCLK**

2.3.21 J1

(Default) 1-2 Short, Normal
2-3 Short, Clear CMOS

2.3.22 J2

(Default) 1-2 Short, SPI ENABLE
3~8 SIGNAL DEBUG CHECK

2.3.23 J3

	**(Default) 1-2 Short, COM4=RS232** **3-4 Short, COM4=RS422** **5-6 Short, COM4=RS485**

2.3.24 J4

	**(Default) 1-2 Short,SERIRQ to SL1 Pin B1**

2.3.25 J5

	**(Default) 1-2 Short, LCD Power=3.3V** **2-3 Short, LCD Power=5.0V**

2.3.26 J6

	**(Default) Short, CF is Master** **Open, CF is Slave**

2.3.27 J7

	**(Default) 1-2 Short, CF is DMA66 support**

3 BIOS SETTING

This chapter describes the BIOS menu displays and explains how to perform common tasks needed to get up and running. It also gives detailed explanation of the elements found in each of the BIOS menus. The following topics are covered:

- Main Setup
- Advanced Chipset Setup
- Peripherals Setup
- PnP/PCI Setup
- PC Health Setup
- Boot Setup
- Exit Setup

3.1 Main Setup

Once you enter the Award BIOS™ CMOS Setup Utility, the Main Menu will appear on the screen. Use the arrow keys to highlight the item and then use the <Pg Up> <Pg Dn> keys to select the value. You want in each item.

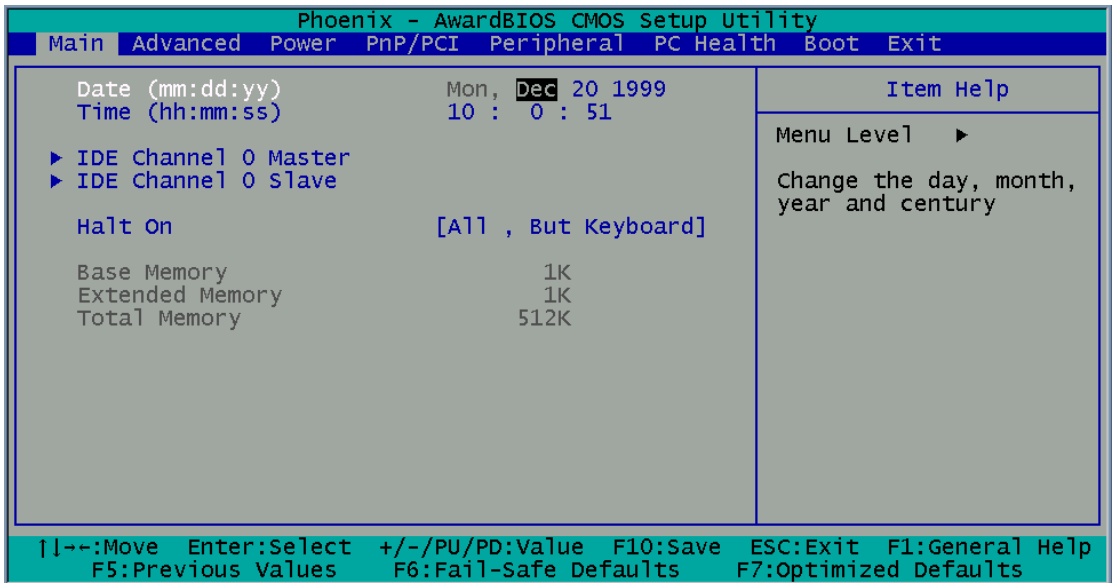


Figure 4: Main setup

Note : Listed at the bottom of the menu are the control keys. If you need any help with the item fields, you can press the <F1> key, and it will display the relevant information.

Option	Choice	Description
Date Setup	N/A	Set the system date. Note that the 'Day' automatically changes when you set the date
Time Setup	N/A	Set the system time
IDE Channel 0 Master/Slave	N/A	The onboard PCI IDE connectors provide 1 channel for connecting up to 2 IDE hard disks or other devices. The first is the "Master" and the second is "Slave", BIOS will auto-detect the IDE type.
Halt On	All Errors, No Errors, All but keyboard.	Select the situation in which you want the BIOS to stop the POST process and notify you.

3.2 Advanced Chipset Setup

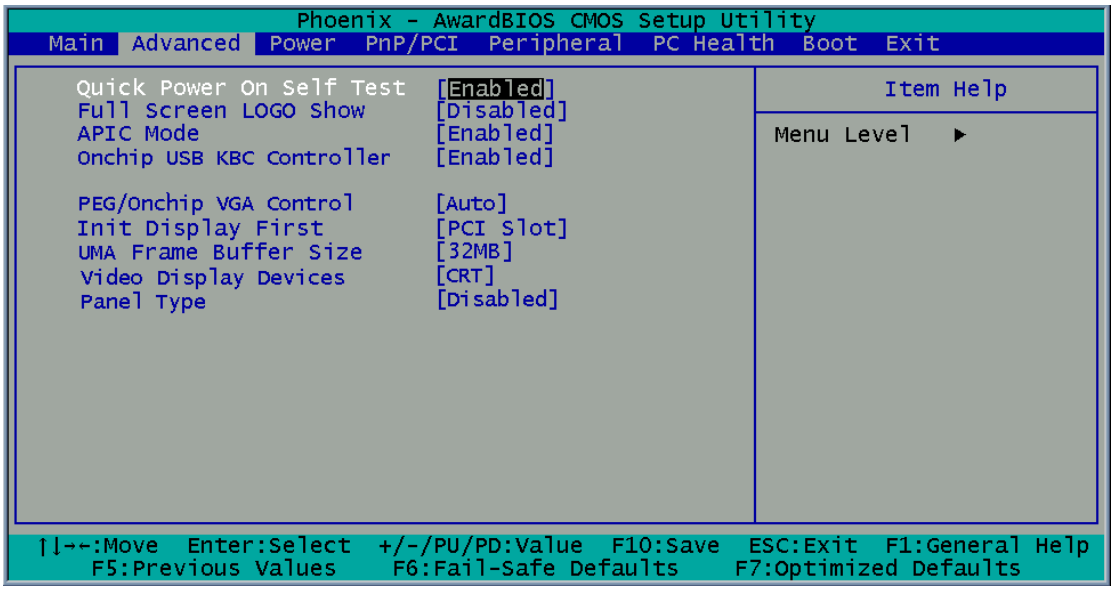


Figure 5: Advance chipset setup

Option	Choice	Description
Quick Power On Self Test	Enabled Disabled	This category speeds up Power On Self Test (POST) after you have powered up the computer. If it is set to Enable, BIOS will shorten or skip some check items during POST.
Full Screen Logo Show	Enabled Disabled	Select Enabled to show the OEM full screen logo if you have add-in BIOS.
USB Keyboard Support	Enabled Disabled	Select Enabled if your system contains a Universal Serial Bus (USB)controller and you have a USB keyboard..
On-Chip Frame Buffer Size	1Mb 8Mb	This Item is for setting the Frame Buffer (Share system memory as display memory).
Boot Display	CRT LCD CRT+LCD TV	This Item is to set display device
Panel Type	800x600, 1024x768, 1280x1024	This Item can Set the LVDS panel resolution that you want

DVMT mode	FIXED DVMT Both	This item sets the mode for dynamic video memory technology (DVMT).
DVMT/FIXED Memory Size	64Mb 128Mb	This item sets the DVMT size

3.3 PnP/PCI setup

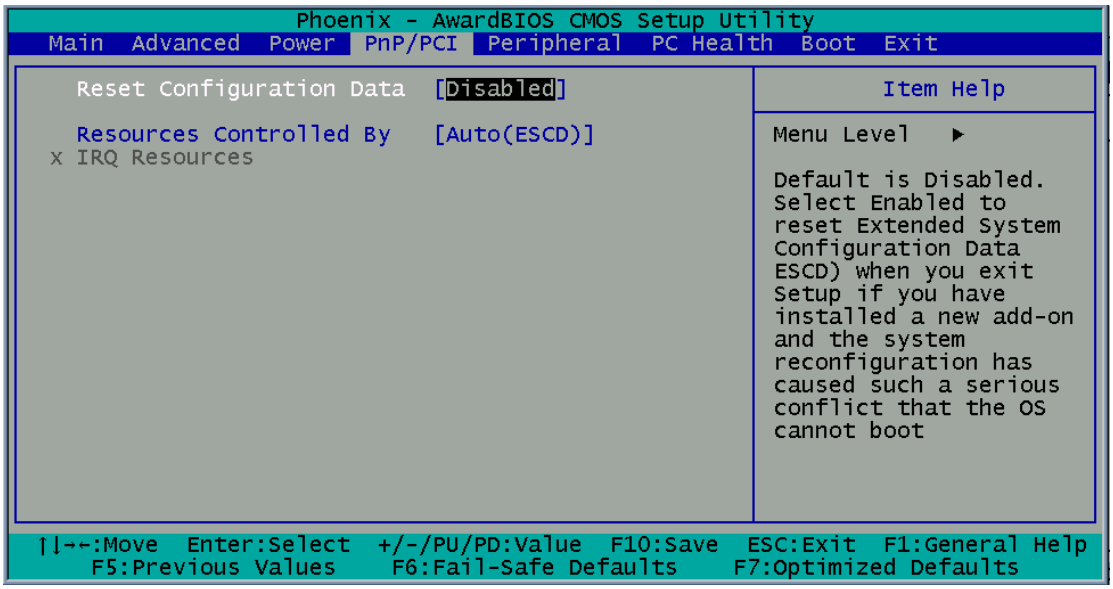


Figure 6: PnP/PCI setup

Option	Choice	Description
Reset Configuration Data	Enabled Disabled	Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup. If you have installed a new add-on and the system reconfiguration has caused such a serious conflict, then the operating system can not boot.
Resources Controlled By	Auto (ESCD) Manual	The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows 95. If you set this field to "manual," then you may choose specific resources by going into each of the submenus.

IRQ Resources	N/A	When resources are controlled manually, assign a type to each system interrupt, depending on the type of the device that uses the interrupt

3.4 Peripherals Setup

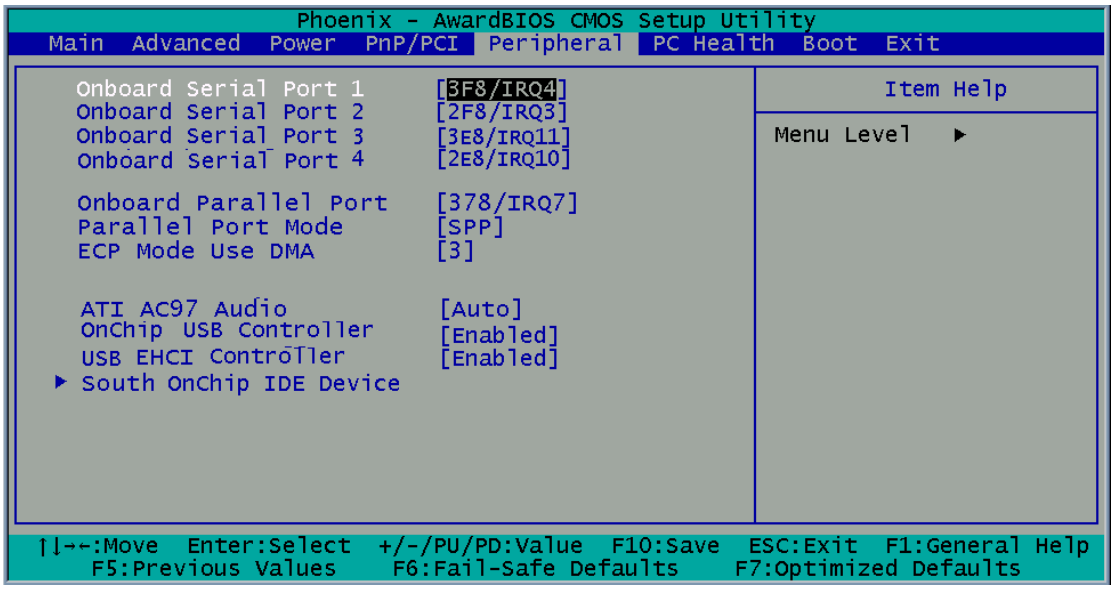


Figure 7: Peripherals setup

Option	Choice	Description
Onboard Serial Port 1 **Onboard Serial Port 2** **Onboard Serial Port 3** **Onboard Serial Port 4**	Serial Port 1: 3F8 / IRQ4 Serial Port 2: 2F8 / IRQ3 Serial Port 3: 3E8 / IRQ11 Serial Port 4: 2E8 / IRQ10	Select an address and the corresponding interrupt for each serial port
USB Controller	Enabled Disabled	Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have USB peripherals
USB 2.0 Controller	Enabled Disabled	Select Enabled if your system contains a Universal Serial Bus (USB) 2.0 controller and you have USB peripherals
AC97 Audio Function	Enabled Disabled Audio/Modem	This item allows you to decide to enable/disable AC97 Audio
On chip IDE DEVICE	Enabled Disabled	The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select Enabled to activate each

		channel separately.

3.5 PC Health Setup

This section shows the parameters in determining the PC Health Status. These parameters include temperatures, fan speeds, and voltages.

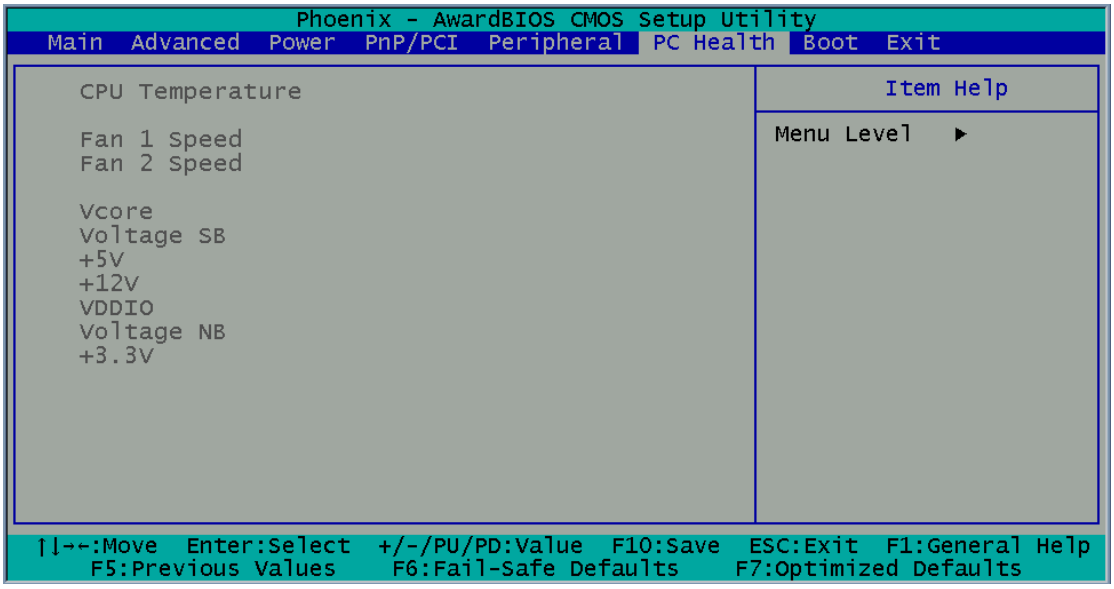


Figure 8: PC health setup

3.6 Boot Setup

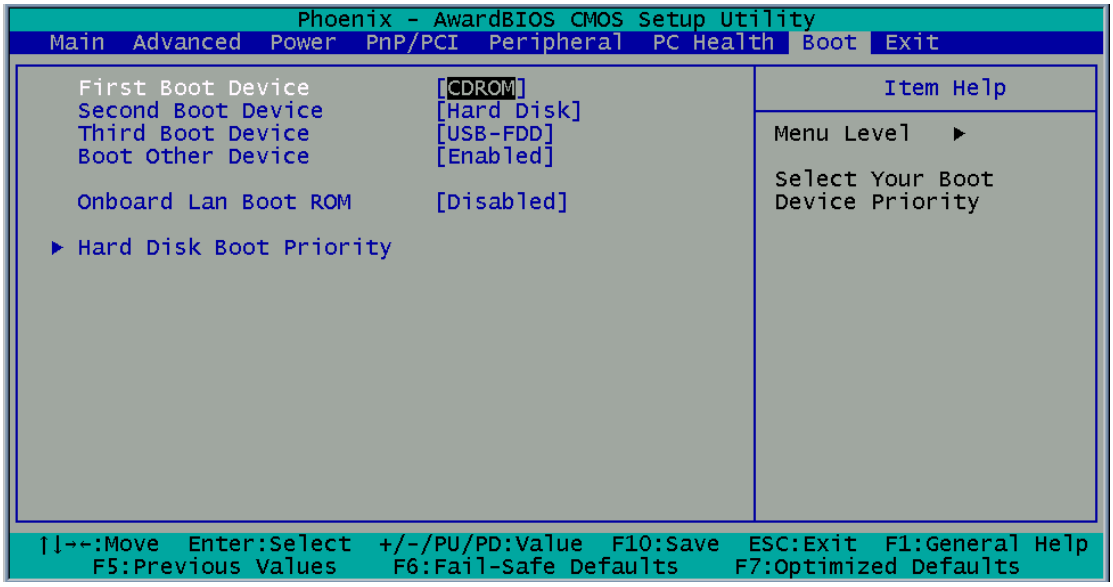


Figure 9: Boot setup

Option	Choice	Description
First / Second / Third Boot Device/Other Boot Device	Hard Disk CDROM USB-FDD USB-CDROM LAN Disabled	The BIOS attempts to load the operating system from the devices in the sequence selected in these items.
LAN Boot Select	Enabled Disabled	These fields allow the system to search for an OS from LAN
Hard Disk Boot Priority	N/A	These fields set the Boot Priority for each Hard Disk

3.7 Exit Setup

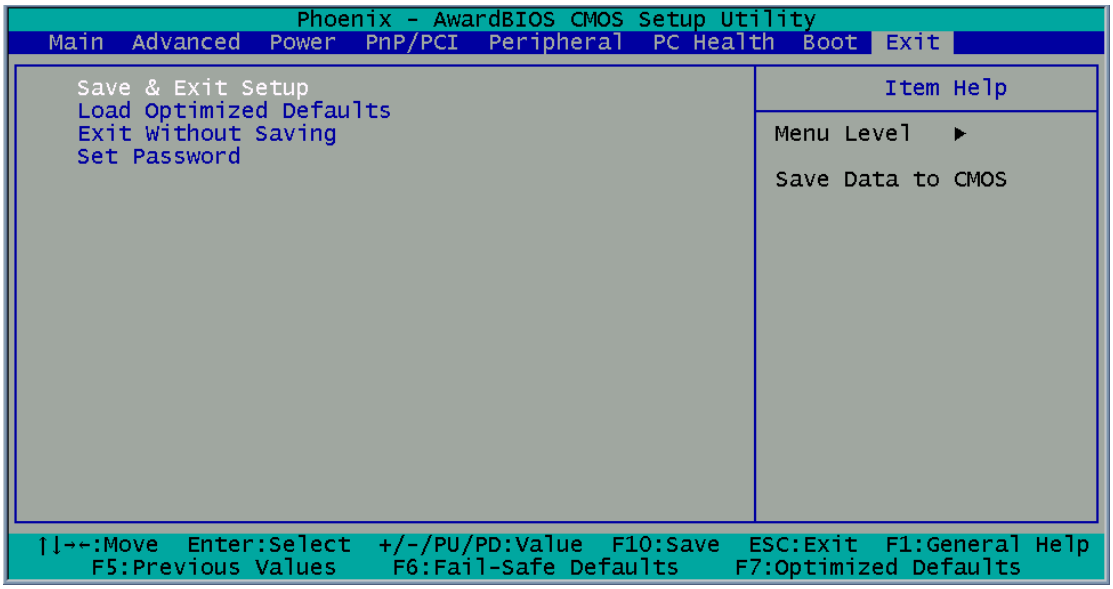


Figure 10: Exit setup

Option	Choice	Description
Save & Exit Setup	Pressing <Enter> on this item for confirmation: **Save to CMOS and EXIT (Y/N)? Y**	Press "Y" to store the selections made in the menus in CMOS – a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values the system is restarted again
Load Optimized Defaults	When you press <Enter> on this item you get a confirmation dialog box with a message like this: **Load Optimized Defaults (Y/N) ? N**	Press 'Y' to load the default values that are factory-set for optimal-performance system operations.

Exit Without Saving	Pressing <Enter> on this item for confirmation: **Quit without saving (Y/N)?** **Y**	This allows you to exit Setup without storing any changes in CMOS. The previous selections remain in effect. This shall exit the Setup utility and restart your computer.
Set Password	Pressing <Enter> on this item for confirmation: **ENTER PASSWORD:**	When a password has been enabled, you will be prompted to enter your password every time you try to enter Setup. This prevents unauthorized persons from changing any part of your system configuration. Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previous password from the CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password. To disable a password, just press <Enter> when you are prompted to enter the password. A message will confirm that the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.